THE NEW JERSEY FORESTER

AN ILLUSTRATED BI-MONTHLY JOURNAL DEVOTED TO THE DEVELOPMENT OF OUR FORESTS.

OFFICIAL ORGAN OF THE SOUTH JERSEY WOODMEN'S ASSOCIATION, PUBLISHED UNDER THE AUSPICES OF THE AVALON SUMMER SCHOOL OF FORESTRY.

VOLUME I. MARCH 1, 1895. NUMBER 2.

CONTENTS.

EDITORIAL, ... 13
LEADERS OF FOREST REFORM,—I. BERHNARD E. FERNOW. . . 14
THE WOOD OF THE WHITE CEDAR, ... 15
By F. ROTH.
THE RELATION OF BIRDS TO THE DISTRIBUTION OF FORESTS, . 16
By DR. SPENCER TROTTER.
IS COUNTRY LIFE LONELY? 17
By C. H. CRANDALL, in the *North American Review*, for July, 1894.
DESTRUCTIVE EFFECTS OF WINDS ON SANDY SOILS. 18
THE AMERICAN FORESTRY ASSOCIATION. 19
WORDS OF PRAISE. 19
PLANT CHESTNUT TREES. 19
FIRE LINES IN AUSTRALIA, ... 19
PURE WATER FOR PHILADELPHIA. 19
VALUABLE TREE CHARTS. 19
UNDERGROWTH IN FORESTS. 20
AN OFFER TO PUBLIC SCHOOL TEACHERS. 21
MINOR FOREST PRODUCTS OF SOUTH JERSEY. 21
FIRES IN THE FAR WEST. 23
OUR SWAMPS ARE AGED. 24
COMMONSENSE TREATMENT OF OUR FORESTS. 24
PASSAIC WATER DANGEROUS TO HEALTH. 24

LAST SUPPLEMENT TO THE FOREST FIRE LAW.

CHAPTER CXCIV.

A supplement to an act entitled "An act to provide for the extinguishment of forest fires in third and fourth-class counties of this State, and to provide for the payment of the expense thereof," approved March twenty-third, one thousand eight hundred and ninety-two.

Whereas, Forest fires, very destructive in their effects, are of frequent occurrence in the timbered portions of this State; and, whereas, owing in a great measure to a lack of legal authority in the premises, no intelligently organized system and of fighting and extinguishing such fires prevails; in remedy whereof.

1. Be it enacted by the Senate and General Assembly of the State of New Jersey, That in any township, in counties of the third and fourth-class in this State, where any sum of money shall be raised under the act to which this is a supplement, to defray the expenses of fighting and extinguishing forest fires, it shall be the duty of the township committee of such township, at its next meeting after such sum shall have been ordered raised, to appoint a suitable person, being a resident of said township, to act as fire marshal thereof, and at the same time to determine the amount of compensation per diem to be paid such fire marshal when in the active performance of his duties; upon notice from the person so appointed of the acceptence of the said office the said township committee shall immediately issue to him a certificate of his appointment, under their hands and the seal of the township.

2. And be it enacted, That after receiving his certificate of appointment as aforesaid, shall have the power to designate and empower a proper person to act as his deputy in case of his absence or disability from any legitimate cause, and the said deputy shall, while engaged in the active duties of the said office, receive the same compensation per diem as his chief.

3. And be it enacted, That it shall be the duty of said marshal, on being apprised of the existence of any forest fire, either in his own township or any adjoining township, by which the safety of any property in his own township be may imperiled, to proceed forthwith to the location of such fire, and assume abolute direction and control of all operations to be undertaken for the extinguishing thereof within the bounds of his own township; he shall have the power during the continuance of such fire to appoint as many persons to act as aids in carrying out his instructions as he may deem necessary, and all persons employed by the township committee, and all other persons present who may be actively engaged in subduing such fire, shall act in the premises solely according to his orders and those of his authorized aids; he shall keep as nearly as possible a correct account of the names of all persons actively engaged in fighting such fires, together with the time in which they are so employed, and in a reasonable time after such fire shall have been effectually extinguished he shall report a statement of said account to the township committee of his township.

4. And be it enacted, That the township committee of such township shall cause to be made an accurate map or maps of such portions of the forest lands of their township as are, in their opinion, ordinarily subject to damage by fires, with all public highways, railroads and such private and by-roads running through the same as are deemed necessary and accurately delineated thereon, together with such distances between any given points on said roads or their intersections with other roads as may seem advisable, and shall cause to be made whatever surveys and measurements are necessary for the proper completion of said map; one copy thereof when completed, shall be filed with the township records, and such copies of the same furnished to the fire marshal as the said committee shall deem advisable.

5. And be it enacted, That the township committee of such township shall audit the account, rendered them by the fire marshal and pay out of any funds of said township on hand and not otherwise appropriated all just and reasonable bills presented for the work and expenses of fighting and extinguishing such fires, together with all expenses incurred in making and procuring the aforesaid maps and surveys.

6. And be it enacted, That the township committee shall at any time have the power of removal of said fire marshal for incompetence or neglect of duty and the appointment of another person in his stead.

7. And be it enacted, That this act shall take effect immediately.

Approved May 14, 1894.

IN THE PINES IN WINTER.

Photographed by Lightfoot

J. W. Shea, Printer.

THE NEW JERSEY FORESTER.

A Bi-Monthly Journal Devoted to the Development of Our Forests.

Edited by John Gifford, May's Landing, N. J.

Vol. I. March 1, 1895. No. 2

$1.00 A YEAR.

A very successful meeting of the New Jersey Forestry Association was held in Trenton on the twelfth of last month.

At the business meeting in the afternoon the American Forestry Association was invited to hold its peripatetic meeting in South Jersey from May 1st to May 5th.

We have the pleasure of announcing that this invitation has been accepted and that a full itinerary will appear in the next issue of the New Jersey Forester.

We sincerely hope that the people of New Jersey, and especially of the towns visited, will extend to our distinguished guests a very cordial reception.

This meeting will be an event of signal importance, an epoch in the history of forestry in New Jersey. We hope it arouses sufficient interest to cause a reform at once in the treatment of of our woods, so that the land in South Jersey, unfit for other crops, may become forest-clad and yield an abundance of forest products.

The South Jersey Woodmen's Association was made a branch of the New Jersey Forestry Association. The New Jersey Forestry Association, the South Jersey Woodmen's Association, the NEW JERSEY FORESTER and the Avalon Summer School of Forestry are therefore officially affiliated.

Methods for arousing interest in forestry in public schools were discussed, and the plan proposed by Prof. Apgar will be printed in the next issue of the NEW JERSEY FORESTER. In furtherance of his scheme Mrs. Benj. Lee contributed three prizes of five dollars each for Cape May, Cumberland and Atlantic Counties; Dr. Theo. Price, a prize of five dollars for Ocean; and the NEW JERSEY FORESTER the same for Burlington County.

A committee was appointed to arrange for lecture courses throughout the State, another to apply for a charter and another to attend to the all-important matter of legislation.

A committee was appointed to endeavor to affect an official union with the American Forestry Association. The centralization of work done throughout this country being one of the principal functions of that organization.

In the evening a public meeting was held and matters pertaining to the forests of the State were discussed. The audience consisted of representatives from many parts of New Jersey.

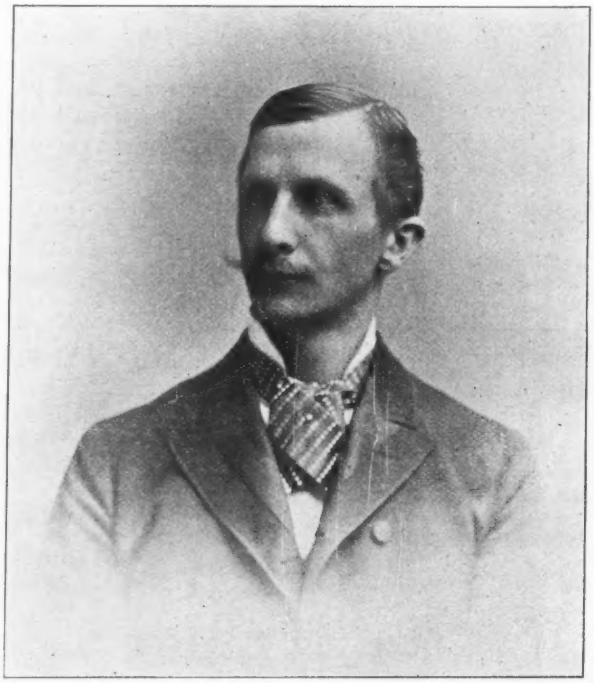
The itinerary of the visit of the American Forestry Association has not been fully prepared, but the committee will endeavor to arrange it so that the forest conditions of the region may be seen to good advantage and so that a few of the most active towns may be visited where meetings for lectures, discussions and speeches may be held.

It will probably include a trip down the Delaware, a short stop at Vineland, another at Avalon to view the destructive effects of moving sand, another at Atlantic City and another at Lakewood. If time permits the peculiar region known as the "Plains" will be visited in the vicinity of which the awful effects of fire are well illustrated.

Leaders of Forest Reform.

I. Bernhard E. Fernow.

Mr. Fernow is Chief of the Forestry Division of the Department of Agriculture. He is enthusiastic, practical and able. He was born in Prussia but has lived in America almost twenty years and has married an American lady. He was graduated at a German Gymnasium and after a course in Forestry covering a period of more than six years served in the Franco-German War leaving the army as a commissioned lieutenant. He came to America in 1876 to attend the Centennial Exposition in Philadelphia. For some time he managed the land interests of a New York firm engaged in the manufacture of charcoal and lumber in Pennsylvania. He is a cautious investigator and a forcible writer and speaker. Mr. Fernow is well fitted for the distinguished position that he now holds. Under the direction of the proper person with sufficient appropriations there is at present no department more useful to the American people than the Forestry Division. We sincerely hope that the representatives from New Jersey will do all in their power to enlarge and strengthen it.



Although a lover of trees, Mr. Fernow is a true forester to whom a forest is a crop which should be cut and used at the proper time in the proper way. He is the friend of the lumberman.

We believe that the Forestry Division is more than fulfilling what the *Northwestern Lumberman* required of it in August 1890 in the following significant paragraph:

"The Forestry Division of the United States Department of Agriculture may, or may not, be of direct benefit to lumbermen. It depends entirely on the kind of man at the head of the division, and the facilities afforded him for carrying forward his work. He may be a good man, and yet the appropriations be so niggardly as to effectually debar him from accomplishing his object. On the other hand, were the appropriations ample for all desired purpores, a mere theorist at the helm would accomplish nothing of real value. It properly comes within the scope of the forestry division to disseminate a knowledge of the forests, which includes, of course, their extent, and the comparative qualities of the different woods, as shown by scientific tests—information that would be of vital interest to lumbermen and woodworkers everywhere. Strange as it may sound to the novice, the study of woods is in its infancy. Reforesting, too, will receive more and more attention. The importance of the work of the forestry division cannot be overestimated, and if the *Lumberman* could have its way the appropriations by the government for forestry would never be stinted."

The Wood of the White Cedar.

By F. Roth.

The wood of the White Cedar (*Chamæcyparis thyoides*) is light and soft, easily worked, even in texture, readily seasoned, clean and white in color, with pleasing odor, and remarkable for its durability. White Cedar ranks among the best of our coniferous woods.

A thrifty tree, fifty years old in South Jersey measuring twelve inches breast high, five inches, fifty feet from the ground, adds a quarter of an inch every year to its diameter, or about two cubic feet of wood to its stem.

With a mere line for a pith and an excellent close protective bark as cover, the stem is but little subject to the inroads of boring insects or decay-producing fungi and accordingly is very free from disfigurements and blemish.

Like White Pine, the White Cedar is decidedly a heart-wood tree. Only the outer seven to fifteen rings, occupying commonly less than one inch of the radius, are sap-wood. As in other conifers, old and stunted trees have many more rings in the sap-wood, often up to forty and more. But even in this case, the width of the sap-wood is never great. Containing water only in the cell-walls, the heart-wood is light, the log therefore floats "high."

Perhaps no other wood in the market seasons as rapidly and perfectly as White Cedar. Neither warping nor checking need be feared and almost any temperature may be employed.

In lightness it is surpassed by none of the woods in Eastern markets and in its well-grown form it equals, if not excels, even the choicest "pumpkin" variety of the White Pine, and is thus well-fitted for a thousand and one uses.

In its structure it shares the great simplicity of coniferous woods. It is made up of tracheids or fibers, very small medullary or pith rays, and scattered resin cells. The tracheids are comparatively large, rather uniform in size and shape and generally quite thin walled.

A perfectly fresh block 3x8 and only six inches long, with the fiber, was subjected for eight hours to about 300° F, under high pressure, and though the color was permanently altered, the wood came out sound and without a single check, while pieces of oak opened up one eighth of an inch in some cases. Its shrinkage in drying is considerable; sap-wood shrinking more than heart-wood, the shrinkage parallel with the rings being greater than that along the radius.

In small sized pieces the shrinkage was as follows:

		One Hundred Inches Shrink	
		Tangential	Radial
In Drying from Fresh to Air Dry State	Heart-wood	Inches 3.8	Inches 1.3
	Sap-wood	5.5	2.0
From Air Dry to Kiln Dry State Dried at 175 deg. F.	Heart-wood	3.0	1.3
	Sap-wood	3.8	1.0
From Fresh to Kiln Dry State	Heart-wood	6.8	2.6
	Sap-wood	9.3	3.0

Small pieces like these, take moisture from the air, regain the "air dry" state within a short time after leaving the kiln, and return to their original volume if put in damp cloths, and, especially the dimensions of the heart-wood, commonly exceed the original dimensions if the wood is immersed in water. By boiling seasoned pieces of wood, their sides, especially the tangential ones, become greater than they were when the pieces were yet in fresh condition.

Small seasoned pieces soaked for two months in cold water and subsequently boiled could not be made to sink, showing how reluctantly water is taken up by the wood, porous as it seems.

One hundred pounds of fresh sap-wood in one case, contained seventy pounds of water, the same amount of heart-wood from the same log only twenty-one pounds. Of the former, all but two pounds evaporated at ordinary temperature, of the latter seven pounds remained, and could be removed only by kiln drying.

Being free from resin ducts, its essential oil and resin are distributed in the small resin cells and never accumulate in large quantities to gum up tools or otherwise interfere in its manufacture. The wood is soft, easily split and readily shaped into any desired form. Where great hardness, strength or toughness is wanted, White Cedar has no place, but where a light, soft, even-textured wood is desired which will "stand" or hold its shape, is readily procured or raised in suitable sizes, this wood certainly deserves special attention.

At present it is chiefly used in boat and canoe construction, for shingles and lath, especially the former, and also light cooperage and case work.

Its well-known durability, like that of others of the cedar tribe is most remarkable and is best illustrated by the fact that thousands of logs, remnants of buried forests have been unearthed and utilized.

The Relation of Birds to the Distribution of Forests.

By Dr. Spencer Trotter.

The wise old saw of "Never despise the day of small things" finds a forcible illustration in the relation of birds to the spread and distribution of forest trees. The cross-bill or the pine grosbeak pries out the seeds of a hemlock cone in the North woods and, wandering off along the Appalachian ridges, drops some of them far to the South. What one individual does a vast number of others do also, and a vast number of seeds must, therefore, be carried in this way. The great pine belt that extends across the entire Northern border of the North Temperate Realm throughout Europe, Siberia and North America has undoubtedly spread largely as a result of the food habits and movements of various species of birds. Within their isothermal limits various species of trees are thus undoubtedly spread far and wide from their original centers of growth. In the gradual encroachment of ploughed and fallow land on the forest area, through the destructive agency of man, the birds have been the conservators of the woods.

The lines of fences which man has strung about his lands became "bird roads" across the fields. Along these fences the straggling lines of various trees mark the tracks of birds. This is eminently true of such a tree as the red cedar, (*Juniperus Virginiana*), the berries of which are eagerly sought and devoured by many birds, such as the robin, cedar-bird, flicker, blue-bird and other species. There is no more characteristic feature of landscape in the open lands of the Eastern United States than this fringe of cedars marking the fences about fields and along the road sides.

The Sour-gum tree is in like manner distributed by birds and has probably been spread from some remote center of development at an early period.

Probably most of our forest trees that have taken to living in the open lands have been brought there by birds and other animals, such as squirrels and various rodents. The beech has thus spread out from the woodland, and the wild pigeons which feed upon the angular nuts of this tree, have undoubtedly played an important part in the distribution of beech forests. So with the oaks, the acorns of the various species are eaten by jays and many seeds must have been carried and dropped in distant places. It is interesting to note the distribution of certain birds in relation to forest trees—the jays are birds of the oak woods, from Japan to the British Isles and across the North American Continent.

It seems surprising how little account has been taken of the role of bird life in the distribution of woodlands when we consider the fact that the fruit is intended to be eaten by birds and animals in order that the seeds shall be distributed, and also of the long distances traversed by migrating birds.

Trees originally of the South must certainly have thus spread toward the North within their isothermal limits and many Northern species must likewise have established themselves much farther Southward than they could possibly have done without the agency of birds.

As *preservers* of forests the birds have also played an important part.

Various species of wood-peckers bore into the trunk and limbs of trees and devour an immense number of lignivorous or wood-eating insects. The only species of American Wood-peckers that is distinctly harmful to trees is the yellow-bellied species, (*Sphyrapicus varius,*) which is a "sap-sucker," and to which the peculiar circular chains of scars on the trunks of apple trees is due, though his destructive work has had little effect upon forest growth.

Many species such as the titmice, wrens, creepers and nut-hatchers are actively engaged in destroying insect life, both in the egg and larval state, that would ultimately prove harmful to numerous trees. A law that protects the birds protects the forest.

As a cover and retreat for wild game the forest held a very important place in man's early history. It was the source of food to most of the early people of the North Temperate Realm. Game and forest laws were synonomous in the Courts of Mediæval Europe. Robin Hood and his merry bow-men in the heart of Sherwood Forest is a picture of the oppressed yeoman holding his inalienable rights to the forest and its food supply against the royal law that protected the sport of kings. To-day the same law is the forest law. To protect the game we must protect the forest.

If we can call up a picture to our mind of what would happen should the American people lapse into savagery and become like the Indian tribes of old we would see the forest slowly but surely spreading over the cleared lands, hiding the familiar hills and valleys, the ruins of towns and cities, and bringing back to man the old source of food, shelter and life. Besides the currents of wind and water he would have alone the animals of the woods to thank.

Is Country Life Lonely?

By C. H. Crandall.

From the *North American Review* for July, 1894.

It is often solitary, retired, to a certain degree; but does a secluded life in the country necessarily breed a feeling of lonesomeness, irksome discontent, and a homesickness for the city? This is a question that must interest any who contemplate a change from city to country. One will say the answer depends on the person who makes that change, and the answer has much truth. Another will say that it depends on the location of the country home, and that, too, has an important bearing. A house situated in a low, narrow valley, with no other habitation in sight, surrounded by woods and swamps, with scarce a lovely object in view, would indeed be lonely. It ought to be lonely, and it ought to breed such discontent as to drive the owner to seek a more cheerful location. I will add to these two important answers this third one: That one's lonesomeness in the country depends largely upon one's will, one's attitude toward the country. If you begin country life feeling that you are a foreigner to it, and never intend to be naturalized, then you doom yourself to dislike it. Nature will never adopt you into her larger liberties unless you will be adopted, and the shy denizens of bush and brake will never greet you as a fellow citizen. But if you drop this alien spirit and resolve to conquer the country life by openly surrendering to its charms, then you will win a gratifying success.

A young couple hired a pretty farm cottage near the writer last year. They were people of the sanguine sort. They took a three-years lease of it, with the intent of buying. The man was not without conceit. He thought he knew all about the country, all about farming. He asked no advice and took none. He hired a man at high wages to run the farm. The house was newly painted and the rooms were decorated, so as to resemble a gaudy city apartment-house. The man had to be in the city long hours every day but Sunday. He gave orders to his farmer, and the farmer tried his best to carry them out. The newcomer's ideas of farming were fearfully and wonderfully made. Of course the young husband was a loving spouse, and the pair had no end of pretty little names that they called each other before the country folk. Otherwise they never would have stayed the summer through. But long before autumn the young amateur farmer had quarreled with his hired man, and both had to consult lawyers. Another fine quarrel began with the landlord. The young wife—she was very young with a young child—got unutterably homesick. Early in the fall they compromised the lease, sacrificed their new tools and implements, abandoned fruits and crops and the glorious air and tinted leaves of autumn, and fled back to a "nice little flat in the city."

Did they like the country? No, if one may judge from their reports in the city! "It was the most lonesome place, and everything was so disagreeable!" Did they know how to enjoy the country? That is the more pertinent question. Eyes had they, but they saw not. They never were seen to walk through woods or fields. They never called on a neighbor. They were so "lonesome" that they stayed in that little, newly decorated room as if it had been their prison, or indeed a flat on a twelfth floor. They cultivated no plant or flower with their own hands, nor personally cared for any animals, pets or poultry. They did go driving in a stiff, sedate fashion, with a boy driver. Tennis, rowing, fishing, swimming, croquet, sketching, botanizing, base-ball, cricket, lawn parties? No, they were not for them! They were too "lonesome." Straw-rides by the light of the moon? The idea would have given them a shock.

Of course these people deserved their fate. But there are many sensible, cultivated, open-air sort of people who will get lonesome and homesick on the average country farm, for instance. It is true. Let us confess, we have been lonely ourselves. But let us not forget that it may be a good thing to be lonely sometimes. To paraphrase an old proverb, in loneliness there is strength. The lone tree is the broad tree, rugged, storm-defiant. "'Tis a good thing sometimes to be alone," wrote a wise poet. There are times when the spirit in man urges to seclusion. When a man is lonely, the eternal Verities speak to him, as they may not speak in a crowd.

A man need not be unhappy because he is solitary. Ask the spirit of Robinson Crusoe—unreal creation that outlives realities—if he did not more greatly enjoy his life on the desert island than any experiences in the haunts of civilized man. Every little farm, or country cottage, or artist's box in the woods, may be a Crusoe's island to any one with the adventurous, appreciative spirit of Defoe's hero. We follow "Leatherstocking" through the forest, and are charmed with his intimacy with nature, a reverent familiarity that leads him, step by step, "through nature up to nature's God." Yet any one may be educated by the forest if he goes there, as to another university, intending to learn. We are not to imitate "Hawkeye," nor imitate anything, but to listen, and to welcome the awful loneliness of the woods until we get a message from it, remembering that often the lonely lives have been the great lives, and that the true lover speaks only when there is no third party present. There is a plant in the hotbed or greenhouse. It is crowded, growing tall, indeed, but spindling. If you leave it there it may possibly blossom, but will bear little if any fruit. Transplant it to a free, broad space in the air; ah, it wilts! It is "lonely." The sun strikes it down, and storms beat it into the dust. But care for it, watch it, and soon it begins a broad, sturdy growth, blossoms, fruits and becomes what it never would have been in the hotbed.

Destructive Effects of Winds on Sandy Soils.

Prof. F. H. King of the University of Wisconsin read an instructive paper on the "Destructive Effects of Winds on Sandy Soils" before the meeting of the American Forestry Association in Brooklyn last Summer. This appeared later in bulletin form from the Agricultural Experiment Station of the University of Wisconsin. This is worth the study of agriculturists in the Southern part of the State of New Jersey.

During the strong winds in the Spring clouds of moving sand in the cultivated regions along the New Jersey shore of the Delaware may be seen from the highlands on the Pennsylvania side fully five miles distant. Prof. King has shown that crops are thus not only cut by the grains of sand but buried and that the protection afforded by such small objects as fences is remarkable. The same applies to drifting snow which cannot escape the notice of even the most casual observer. Think therefore of the protection afforded by a belt of forest.

The drying effect of the wind is also well known. Every washerwoman knows how quickly clothes dry on a windy day. Prof. King has shown that the atmosphere to the leeward of hedge rows, fences and the like is considerably moister than over unprotected fields. In referring to this bulletin the *American Meteorological Journal* says:

"As a direct result of his investigation, Prof. King comes to certain conclusions as to the means of preventing the destructive effects of winds on crops. The first conclusion is that if light soils are cultivated in long narrow bands, not wider than fifteen to twenty rods, alternating with similar strips of grass, which, if possible, should be largely clover, the crops would be well protected by the influence of the grass, which would extend across the cultivated strips. Secondly, the effect of large fields of naked sandy soil in hot weather is to expand the air in contact with them, the expanded air rising and a cold current from above coming down to take its place, striking obliquely upon the surface, raising a cloud of fine dust, and rolling the coarser grains along the surface. Moreover, the descending air has a peculiar parching effect, as it is naturally dryer than the ground air. It would seem, therefore, that these local currents in Wisconsin are similar in this respect to the hot winds of Texas, recently carefully studied by Dr. I. M. Cline. The cultivation of these large fields in alternate narrow strips of crops and grass would undoubtedly prevent this destructive action to a large extent, the tendency of the grass strips being to lessen the heating of the overlying air, to lessen the turbulent character of the surface wind, and to increase the moisture of the air and lower its temperature. Other methods of prevention are: increasing the water-holding power of the soil, by planting clover, by manuring, and by rotating the crops; leaving the ground uneven after seeding, instead of smooth, the unevenness tending to retard the velocity of the wind; clearing the wooded lands in north and south belts, in order to leave wind-breaks in the path of the prevailing winds, and the planting of wind-breaks, which, as has been seen, act very beneficially on crops to leeward of them.

Prof. King's report is one of value and interest to the meteorologist as well as the agriculturist. While the primary object is to benefit agriculture in Wisconsin, the author's investigations on the effect of clover fields, woods and hedge-rows on the humidity and evaporation of the air to leeward of them, are of distinct value in the present much-vexed question of the effects of forests on rainfall and climate. Prof. King's work on this subject, as well as his previous investigations in regard to the fluctuations and rate of movement of underground water, are indications of the valuable results now being obtained in agricultural meteorology in this country. The field of work now opening up for investigation along such lines as Prof. King has followed is a most attractive one, and the next few years will undoubtedly bring much of value to meteorology as well as to agriculture, from our agricultural experiment stations."

We have too little respect for trees. While they are plentiful we think only of their value in gold. We learn of their true usefulness through their absence. Well-watered, productive lands have been suddenly turned into deserts, and with infinite care and years of toil deserts into gardens. Were it not for the trees which cover it South Jersey would be a bed of shifting sands. The wind in passing over it would be unbearably hot; the streams would dwindle at one time and rush in a flood at another and this region, instead of being a sanitarium, would become unfit for the habitation of man.

Year by year the size of our Great Western Desert lessens and the French by the application of engineering skill may yet forest that Sea of Sand the Great Sahara.

The American Forestry Association.

The American Forestry Association was organized in 1882. It has a large number of members in all parts of the United States and Canada. Meetings have been held in Montreal, St. Paul, Washington, Boston, Saratoga, Denver, Springfield, Ill., Atlanta, Quebec, Brooklyn and in the White Mountains. Wherever it goes it arouses much interest and does an immense amount of good.

Its aims are briefly expressed in article 2 of its Constitution:

"The objects of this Association shall be the discussion of subjects relating to tree-planting, the conservation, management, and renewal of forests, and the climatic and other influences that affect their welfare; the collection of forest statistics, and the advancement of educational, legislative, or other measures tending to the promotion of these objects. It shall especially endeavor to centralize the work done, and diffuse the knowledge gained."

Words of Praise.

From the *Rochester Democrat and Chronicle.*

"In one thing New Jersey is ahead of New York. An association of woodmen in South Jersey has entered upon the publication of a bi-monthly pamphlet devoted to the development of the forests of the State. It is learned from this pamphlet that the legislature of New Jersey is seconding the efforts of local forestry organizations in an admirable manner. In March 1894, an act was passed for a survey of the forest conditions of the State, and the work was put in charge of the State Geologist. In connection with this movement for the preservation and restoration of the forests of New Jersey, a course in practical forestry is to be instituted at the annual summer school on Avalon Island, South Jersey. As announced by the new publication, the attention of the foresters is to be directed chiefly to the reforesting of waste lands, the protection of existing forest tracts with a view to rendering them as useful as possible for lumber supply, and the defense of the coast lands against the encroachment of drifting sand."

It is said that the intelligent King of Texcoco, who commanded that for every full-grown tree destroyed, ten should be planted, was the pioneer in forest reform on this continent.

Plant Chestnut Trees.

Large quantities of chestnuts are shipped to this country every year from Southern Europe. A chestnut grove in proper condition will yield two hundred dollars to the acre in fruit alone. A grove once established bears for many years. Grafted trees must be planted. It is well to use several varieties, maturing at different times, in one grove. The chestnut produces a vigorous second growth, which may be grafted, yields a useful wood and grows rapidly in South Jersey.

Fire Lines in Australia.

In a letter on the "Care of Forests" in the *New York Herald* signed "D. H., Brooklyn, Sept. 4, 1894," is the following interesting note:

"In Australia it was one of the most important works to make fire lines, or open lines cut through the forest to stay the so-called bush fires. These spaces were utilized either for farming, grazing or for the growth of some industrial plant having the the property of quenching fire, many of which are very profitable."

Pure Water For Philadelphia.

By the impounding reservoir system the streams of the pine woods and swamps of South Jersey can supply Philadelphia with an abundance of the purest kind of water. The engineering difficulties in the way are not formidable.

Valuable Tree Charts.

Miss Grace Anna Lewis, of Media, Pa., is preparing a set of valuable charts showing the leaves and fruits of our principal forest trees. They are designed especially for public schools which could not spend money more profitably than by purchasing and framing these charts in different kinds of native woods to hang on the walls as constant reminders.

For the fixation of sand a beautiful California lupine has been suggested. Plants of this family have the peculiar power of fixing the free nitrogen of the atmosphere and are valuable therefore for green manuring. The peanut belongs to the same family, has the same peculiarities and is a very profitable crop. The adaptability of such plants to the soil and climate of South Jersey is worthy careful investigation.

Undergrowth in Forests.

Mr. William F. Bassett, of Hammonton, a horticulturist of long experience, writes concerning the value of undergrowth as follows:

"Along with a great many excellent suggestions in the editorial on forest fires in the first number of the NEW JERSEY FORESTER there are some things which do not coincide with the results of my observations. Evaporation through growing leaves is undoubtedly one of the chief causes of the drying out of the soils and therefore all superabundant foliage must be considered a disadvantage and in this respect a large amount of undergrowth would act unfavorably. Instead of attributing the dryness of the soil in certain pine woods to the lack of undergrowth, I would credit the lack of undergrowth to the original dry and sandy nature of the soil. I cannot, either, quite see the bearing of the remark that the soil is enriched just the same if the dead wood is burned, as the fertilizing value of the ashes is very small compared with the result of decay. Perhaps I do not get the meaning intended to be conveyed. I am well aware that Prof. Thomas Meehan, (and he is very high authority on tree culture), advocates burning the fallen brush and leaves as the simplest remedy for forest fires, but I think nothing is more certain than that the accidental burning up of all the vegetable matter is the greatest bane of our New Jersey soils, and while a careful burning would be far less injurious even in the matter of destroying fertilizing material, yet it is an alternative which I think very desirable to avoid if possible."

Mr. William Meehan, of the *Philadelphia Ledger*, in speaking of this subject at the first meeting of the New Jersey Forestry Association at Riverton, says: "As long as the forest contains heavy undergrowth, and there are careless men with lighted matches or gunpowder to burn, and there are locomotives which throw sparks, there will be forest fires. No laws, no watchers, no amount of vigilance will wholly prevent conflagrations such as now annually devastate thousands of acres of valuable timber. There seems to me to be but one remedy, and that is to keep down the rank underbrush. There is still another point of importance in considering the matter of tree culture and underbrush. As long as the latter is allowed to grow at will just so long will an abundant new growth of healthy trees be in possible. Scrub bushes make a quicker growth than a young tree, and their closely interlocked branches and heavy foliage choke down and kill nine-tenths of the young pines or deciduous trees, which would, could they get light and air, in time grow to beautiful and useful maturity."

We believe that Messrs Bassett and Meehan underrate the value of the proper kind of underbrush which under certain conditions, and especially in the Southern Interior of New Jersey, is essential. We quote the following from "What is Forestry?" a booklet which everybody ought to study, by Mr. Fernow, who is certainly authority on the subject:

"From the soil trees derive mainly that most needful element of growth, water. It is, therefore, very necessary not only to preserve sufficiency of moisture in the soil, but also to keep the soil in such condition that the rains and snows can penetrate it. This is done by keeping the soil shaded and covered with the natural litter and undergrowth, which checks undue evaporation and preserves the granular structure of the soil so favorable to percolation.

Undergrowth, therefore—not, however, the grass and weeds which transpire more water than their shade prevents from evaporating—should be fostered, and the protection of the soil, especially of poor soil, against sun and wind must also be kept in view in the amount of thinning to be done."

In the next issue of the NEW JERSEY FORESTER this subject will be discussed.

An Offer to Public School Teachers.

To the ten teachers in the public schools of New Jersey, who write the best essays of one thousand words each, descriptive of the trees or the forest conditions of their neighborhood, may attend the 1895 Session of the **Avalon Summer School of Forestry**, free of charge. These prize winners will be provided with board and lodging at the rate of six dollars a week. So that for thirty dollars five pleasant and profitable weeks may be spent at the Seashore. These essays must be be ready by June 1st. (*See supplement*).

Minor Forest Products of South Jersey.

By minor forest products are meant all those materials gathered usually in small quantities by many individuals; but which, when aggregated, are by no means of minor importance. Excepting wood for fuel, lumber and paper pulp, all forest products may be considered minor. Employment is thus furnished to many backwoodsmen who help themselves to what they can find of such a nature in the woods. Many are dependent upon the wild cranberry and huckleberry crops for a living.

Scattered throughout our woods are "fat pine knots" from which a fine grade of tar was once extracted. A kiln was built in the ground in which the knots were put. This pit was lined with clay. At the bottom there was an outlet for the tar. When the top of the knots were fired the tar oozed out of the wood and trickled down and out into barrels placed ready to receive it.

These knots are valuable for kindling, and when slivered and bound in small bundles are in demand in cities.

In the Old Country the cultivation of the willow is an important industry. There is no better plant for holding soil in places exposed to washing. It can be propogated easily and grows rapidly. Willow is a much more valuable wood than is ordinarily supposed. It holds a nail tenaciously and, although soft, is durable. There is an interesting epecimen at Gravelly Run, N. J. Some of the main timbers of a one hundred and fifty ton schooner were cut from that tree. The Baron de Hirsh Colony of Russian Jews at Woodbine are cultivating the willow for basket manufacture. We have thousands of acres of waste land which are well fitted for that purpose. The willow and alder yield a fine grade of charcoal which is used in the manufacture of gun powder.

Market baskets are made from the wood of the Sweet Gum. It is called the Liquidamber, Bilsted, Ling and Alligator-wood. Its scientific name is *Liquidamber styraciflua*. It is called Liquidamber because an amber-colored juice, which is used to a limited extent in pharmacy, sometimes exudes from the tree in warm climates. The log is sawed into pieces of the proper length and each is cut into thin circular sheets. When the sticks get too small in circumference to be conveniently cut they are sold for rollers. The bottoms of the baskets are usually of pine. This is the tree, pieces of whose rough corky-ridged branches have been and perhaps are still sold on the streets of New York from twenty-five to fifty cents each. It is called the "Alligator-plant" by fakirs. It is described by them as a wonderful and beautiful plant which will grow from the twig without difficulty. These of course will never sprout and the swindled green-horn learns a lesson which is worth the money. This is a kind of utilization of minor forest products, however, which we are loathe to encourage.

Many claim that the wood of the persimmon is excellent for shuttles and spindles. This is no doubt so since the persimmon belongs to a famous family in respect to its wood. Ebony wood is yielded by several species of persimmon, the finest grained and best of which comes from the Island of Mauritius. The heart is the only part which yields black ebony. The sapwood is softer and lighter in color. The scientific name of the persimmon or date-plum is (*Diospyros Virginiana*), which means "Divine-pear" or "Celestial-fruit."

The wood of the holly is valuable for the manufacture of fancy articles.

The wood of the Sour-gum is also valuable for special purposes. It is sometimes called the "Tupelo or Pepperidge." It is extremely tough and irregularly grained. It is used for wagon hubs, hatter's blocks, malls and the like. It is often turned into pillars for porches.

White cedar in South Jersey is usually sawed into boards, planks, shingles and the like. In other parts of the United States it is used in the manufacture of hollow-ware and pails.

Laurel (*Kalmia latifolia*), Calicobush or Spoonwood, is valued for rustic work. It is used extensively for that purpose in the building of fences, summer houses, benches and the like. The large butts of the laurel-bush, vulgarly known as "nigger-heads" are much used in the manufacture of pipes.

There are no doubt other trees which grow or will grow without difficulty in South Jersey, the woods of which are valuable for special purposes.

Tannin is a materiel which is common to many plants and is used in medicine and for tanning leather. It is yielded by several species but is abundant in our upland sumac. At one time sumac leaves were gathered in large quantities and sold for that purpese. Old fields are full of it. In Sicily a species of sumac has been cultivated for many years for that purpose.

Red cedar yields a valuable oil. It is one of

the clearest oils known. It is used in microscopy to a certain extent. If produced in sufficient quantity it could be used no doubt for a variety of purposes. This oil owing to its odor is disliked by vermin. The wood is valuable therefore for chests.

Sassafras also yields a very fragrant oil which is used to a limited extent.

The extraction of the oil of Gaultheria or Wintergreen although much in demand probably no longer pays owing to the fact that it is manufactured in large quantities in the chemical laboratory.

In the bottoms of our cedar swamps is a moss called Sphagnum which may be considered a forest product. This material is noted for its ability to hold moisture and also to undergo a very great deal of drying and still recover. It is used by nurserymen for packing purposes, In Ocean County it is baled in hay-presses and shipped away in large quantities. This custom ought to be prohibited since it robs our swamps of a very valuable material. Our cedar swamps are natural reservoirs of water and in this respect the Sphagnum plays an important part in helping to retain it. In very dry weather swamps in which Sphagnum is plentiful remain damp.

The American Mistletoe was once quite common in South Jersey. It is parasitic on the Sour-gum. It begins on the branches, moves toward the trunk, gnarls and finally kills the tree which feeds it. It is becoming scarce but has been much gathered at Christmas time. Holly and other evergreens are sold.

The flowers of the magnolia (*Magnolia glauca*) and Arbutus which scent our woods in June are also a source of revenue. The wood of the Magnolia is called "Brewster" by the natives.

Several have attempted to raise the White Mulberry for silk worms. The trees grew but the worms have not flourished. Here and there a white mulberry may be seen growing in yards.

In many places in South Jersey there are acres of young birch also plenty of scrub-oak. These are cut in large quantities for canes and umbrella handles. Holly is also used for the same purpose.

There are several trees and shrubs which yield fruits of considerable importance.

The swamp huckleberry is a fruit deserving more attention than it has ever yet received. It can be easily cultivated and improved. Sometimes a swamp huckleberry reaches the dimensions of a tree. Several bushes of white swamp huckleberries have been found. Whether this is a variety, a sport, or a disease, is not known to the writer. The fruit of thepersimmon is often sold in our markets. It is sweet and healthy but soft and difficult to transport when ripe. It is better flavored after a touch of frost. When green, however, it is rich in tannin and proverbially puckery.

Wild grapes, elder-berries, gum-berries, beach plums and wild cherries, are all, more or less, used for wines, pies and jellies.

The chestnut is a valuable fruit. It flourishes in this soil and climate. There are indications that it was once more frequent in South Jersey. It is easily affected by fires. Chestnut meal is an important article of food in Southern Europe. The planting of chestnut trees ought to be encouraged in South Jersey.

Acorns are abundant. They are much gathered and fed to pigs. It is said that many of our Italian settlers use them for food.

The walnut is a valuable tree for its wood and nuts. The English walnut will grow in South Jersey but does not produce an abundance of fruit.

Around Calico and Old Martha the Hazel-nut has escaped and is growing in the woods.

A firm at Vineland is buying large quantities of forest leaves for the manufacture of linoleum.

Some of our trees and shrubs yield drugs of considerable consequence. The wild cherry is in repute as a medicine. It is used as a tonic.

Almost all of our plants have been or still are considered of medicinal value. White oak bark, dogwood, spicewood, witch-hazel, black willow and others are more or less used.

Every farmer ought to have a wood-lot on his farm. This will yield fuel and timber. He can plant such trees and shrubs however as will produce minor products and thus considerably increase his income. In planting trees we ought always to consider their usefulness as well as beauty. The chestnut is one of the best trees to plant along the streets of our towns. The tree grows rapidly and produces a valuable fruit, but is usually much clubbed and disfigured by boys.

Mr. J. B. Ellis, a famous mycologist, who lives at Newfield, N. J., says that the diseases of the white cedar (*Chamæcyparis thyoides*) due to fungi are not serious. They are of little importance as far as injury to the tree is concerned.

Fires in the Far West.

In the February number of the *Century Magazine* there are several interesting letters in relation to the preservation of forests belonging to the Federal Government by military control. In a letter concerning fires in the forests of California John Muir, the explorer, says: "Incredible numbers of sheep are driven into the California forest pastures every summer, and their courses are marked by desolation. Not only the moisture-absorbing grasses are devoured but the bushes are also stripped bare. Even the young conifers, which are not eaten by sheep when they can find anything else to stay hunger, are greedily devoured in their famishing condition; and to make destruction doubly sure, fires are set during the dry autumn months to clear the ground of fallen trunks and underbrush in order to facilitate the movements of the flocks and to improve the pastures by letting in the sunshine. The entire forest-belt of California, the noblest and most valuable on the on the face of the earth, is thus annually swept and devastated from one end of the Sierra to the other, the young trees on which the permanence of the forests depends being eaten and trampled and burned. Indians also burn off the underbrush to facilitate hunting; mountaineers and lumbermen sometimes carelessly allow their campfires to spread; but the fires of sheepmen form more than ninety per cent. of all. Even in the moist climates of Oregon and Washington the woods have been swept with destructive fires again and again; for, besides the fires set by man, nature sends down fire from Heaven every year in the form of lightning, making the care of man all the more necessary. Only on the wet coast of Alaska have I ever seen a forest wholly free from the destructive marks of fire. Surely the tremendous conflagrations last year in Minnesota and Wisconsin, and lately in other States, ought to be enough to spur any Government to action."

George S. Anderson, Captain U. S. A., in charge of Yellowstone National Park, in speaking of fires in that region says: "So far as the protection of these forests is concerned, I have only to consider the one question of fires. A fire once established in the top of these trees, with a moderate breeze blowing, no human effort can overcome it until the wind dies down, or some obstacle is reached. A man on horseback can hardly escape before it. If from any cause it should die down, it must still be wrtched for days, lest some gust of wind send sparks into the dry pine needles, and start it up again. These fires generally originate from one of three causes: first, lightning; second, the rubbing together, by the wind, of two trees; third, fires started by human agency, of course the last cause is the most frequent. The great success met with in controlling fires here has resulted from the constant system of patrols kept up upon all the travelled routes. The smallest spark left behind by a camping party is extinguished before it can gain any headway."

The following is quoted from an article in the *Review of Reviews* by Robert Underwood Johnson: "It is almost a superfluity of words to point to the well-recognized perils involved in the destruction of forests. Humboldt said: 'In felling trees growing on the sides and summits of mountains men, under all climes, prepare for subsequent generations two calamities at once —a lack of fuel and a want of water.' China, India, Cyprus, Syria, North and South Africa have been conspicuous sufferers from this folly, The decay of the political ascendancy of Spain is attributed to the same cause, and the slopes of Andalusia, even now showing only a fuzzy growth of olives, are the scene of alternate floods and drought of great destructiveness. A similar story is told by the Southern border land of Austro-Hungary, by large sections of Italy, and especially by the South of France, where in the last thirty years thirty-five millions of dollars have been spent to reforest hills which were devastated to pay for Napoleon's wars, though the work is but half completed. The fall in the depth of the rivers of Central Europe—from seventeen to fifty-five inches in fifty years—bears witness to the fate in store for us unless there is a radical change for the better in our public policy. In our own country the disappearance of the empire that once flourished in Arizona and New Mexico, and the annual overflow of the Mississippi, Ohio and Red Rivers are attributed to deforestation. That the peril is not overstated may be seen in a volume which every American legislator ought to know by heart—George P. Marsh's treatise, 'The Earth as Modified by Human Action.' Forty years ago Mr. Marsh said: 'A desolation like that which has overwhelmed many once beautiful and fertile regions of Europe awaits an important part of the territory or the United States . . . . . unless prompt measures are taken to check the action of destructive causes already in operation.' Let any one who has attempted to keep pace with the subject say

how far this fails to true prophecy—the prophecy which Mr. Froude thought an essential test of science. Expert authorities have gone so far as to fix twenty-five years hence as the period of virtual exhaustion of the timber supply at the present rate of depletion. It is not merely the interference of the axe with which we must reckon. Eighteen centuries ago the poet Horace warned his countrymen against exposing forests to the havoc of sheep—a warning which has come down the ages almost unheeded. Last of all, in this country, in the trail of both lumberman and shepherd, more destructive than the edge of the axe or the spade of the sheep's hoof, comes the conflagration. One did not need the object lesson of the recent forest fires in the Northwest to realize that the public domain is daily exposed to a similar danger. Ride along any railway in the Northwest and you may read the story in a record of blackened stumps or overhanging smoke. Not a Summer passes without news of raging fires upon the Government lands. The only wonder is how they ever cease. And yet with all this constant ravaging of the forest our easy-going people do not realize the critical situation of the great West. Worst of all the West itself does not realize it."

Passaic Water Dangerous to Health.

"The Board of Health of Saddle River Township, after listening to complaints from residents along the bank of the Passaic River between Passaic and Paterson, N. J., has decided that the condition of the river is dangerous to health. They have asked the Boards of Health of the cities of Paterson and Passaic and the township of Acquackanock to meet them to discuss a remedy. The river is dammed at Dundee, to furnish water-power for the Passaic Mills, two miles below. Since the building of the dam Paterson has trebled in population and manufactures, and discharges an enormous amount of sewage and factory waste into the stream. Much of this collects at the dam and causes smells which the neighboring farmers say are dangerous to health. Newark long ago refused to drink the polluted water of the river, and Jersey City continues to do so under protest."

The above is from the *Sanitarian* an excellent monthly magazine devoted to the praise worthy object of preventing disease.

Our Swamps Are Aged.

The following is copied from the Geology of New Jersey for 1868: "Dr. Beesley, of Dennisville, some years since communicated to the newspapers an article on the age of the cedar swamps (*Chamæcyparis thyoides*) which was copied by Mr. Lyell in his Travels in the United States, Second Visit, Vol. I, p., 34; in which Dr. B. says that he 'counted 1,080 rings of annual growth between the centre and outside of a large stump six feet in diameter, and under it lay a prostrate tree, which had fallen and been buried before the tree to which the stump belonged first sprouted. This lower trunk was five hundred years old. So that upward of fifteen centuries were thus determined, beyond the shadow of a doubt, as the age of one small portion of a bog, the depth of which is as yet unknown.'"

Yet these masses of rich vegetable matter which have been ages in accumulating are destroyed in a few hours by forest fires.

The Need of Our Forests Is Simply CommonSense Treatment.

The policy of this Journal and Association is forcibly expressed in the following words by Mr. Fernow from the January number of the New Jersey Forester:

"When through the organization and efforts of the Association the danger of loss by fire has been reduced, then it will be time to show how by the judicious use of the axe the condition and usefulness of the natural woods may be increased and finally a rational system of forest management introduced. For forestry is not what its first advocates in this country believed it to be, the preventing of the use of the forest or the relegation of the same to one use only, namely, as a cover to preserve equable water conditions. Forestry is exactly the same as agriculture, it is the application of superior knowledge and skill to produce wood crops, managing them in such a way that the largest amount of the best timber is produced in the shortest time, or in other words, the largest income from the forest property without leaving out of consideration the other benefits accruing from a dense forest cover.

ARRANGEMENT OF COURSES OF

The Avalon Summer

School of Forestry.

SESSION OF 1895.

July 8 ——— **August 10.**

Avalon situated fifteen miles north of Cape May, is the gem of the Jersey Coast; its beach sloping gently seaward for a thousand feet, is unsurpassed for beauty, hardness, evenness and safety, and is flanked by picturesque sand dunes rising in continuous ridges for several miles.

Forests of oak, cedar, pine and holly cover a large part of the island, and the opportunities for botanical and zoological collecting, and for studying geological phenomena are equalled at few other places on the Eastern Coast. There will be many excursions to the mainland, the forest conditions of which are of special interest.

The reaches of meadow to the west of the island, the magnificent surf, the old buildings, the trees festooned with pendant vines and lichens and the wierd stretches of sand dunes present unrivaled material for the artist and the student of art.

The climate of the place is most favorable to health and study.

The thoroughfares and adjacent sounds offer rare facilities for boating and fishing, and the broad, hard, uninterrupted beach superb opportunities for wheeling and driving.

For bathing purposes the beach is the finest along the Jersey Shore, recalling the Holland Coast at Scheveningen.

The Avalon Summer Assembly and Summer School of Forestry are held Under the Auspices of the American Association for the Advancement of Education.

The general aim of this Association is the advancement of education, through the organized efforts of teachers and of others who are interested in educational work, and the encouragement and actual introduction of such educational reforms and experiments as are demanded by modern progress in Arts, Science and Letters.

One of the immediate aims is the introduction of practical science studies and natural methods of instruction in public and private institutions by affording teachers and others, practical means for training themselves to a broader understanding of those subjects commonly taught, or which should be taught.

In our treatment of forests reform is needed and education of the people in the rudiments of forestry is the only way to accomplish it.

The forest is an inherited capital which should not be thoughtlessly destroyed, but carefully used and reverenced to descend as an heirloom from generation to generation.

Instead of using the forest increment which is sufficient, if properly managed, to supply our wants, we devour the principal. We have slaughtered our forests with outrageous prodigality.

In spite of the direful effects of deforestation the lumberman cuts, and infernal fires burn, while foresters and forest-lovers strive to convince the masses and their voice the legislators, that forest regulation, for the sake of the community, is needed. Progress in this line seems slow, although the movement has reason in its favor and countless examples of the condition to which this recklessness is leading us. Every individual, who has thought of this matter and has observed forest conditions in different parts of the world, is convinced that masses of trees tend to lessen in many ways the destructive forces of nature, and that at the present rate of cutting and burning much of our land will soon be deserts, plains and savanas; our soils will wash into the sea; our climate will be cold and hot; there will be destructive winds, droughts and floods; and timber, fuel, paper-pulp and a host of minor forest products will become scarce and costly. This seems far-fetched, but all this in places has already happened. Fortunately a more thoughtful element offsets, to a certain extent, this destruction by planting trees in parks, along streets and around dwellings.

Education in this line is the dominating need of America to-day. As a single seed produces a great forest, so we hope that the spirit of education in forestry matters beginning at Avalon may spread throughout this country and that schools with such a purpose may be found in every State.

The education of the coming generation in the principles of forestry, the prevention of forest fires by proper policing, the foresting of waste-lands by the Government, the encouraging of settlers to leave wood-lots on their farms, and the planting of suitable trees along our streets and roads, in parks, botanic gardens and around our houses will quickly lead to the preservation and increase the value and size of our greatest inheritance—the forest.

Officers of Instruction and Administration.

DR. CHAS. DOLLEY.—President of the American Association for the Advancement of Education and Lecturer on Zoology in relation to Forestry.

JOHN GIFFORD.—Director of the School of Forestry.

DR. T. M. LIGHTFOOT.—Lecturer on Geology in relation to Forestry and Instructor in Surveying.

DR. SENECA EGBERT.—Lecturer on Forests in relation to Health.

ELLIS A. SCHNABEL.—In charge of Reading Class in German.

BERNHARD MAURICE.—In charge of Reading Class in French.

ALBERT B. ENTWISLE.—Lecturer on the Uses of Woods.

COURSES.

All Courses of the Summer Assembly in Natural Science are open free of extra charge to the Students of the School of Forestry.

(1.) I—Plant Physiology.
II—Trees of the Eastern United States and the West Indies and their Products.
III—Geographical Distribution of Trees.
IV—Forest Influences.
V—Some Diseases of Trees.—JOHN C. GIFFORD.

(2.) Zoology in Relation to Forestry.—DR. CHAS. DOLLEY.

(3.) Surveying and Field Work.—DR. T. M. LIGHTFOOT.

(4.) Sanitary Effects of Forests.—DR. EGBERT.

(5.) Class for the Reading of an important German Work on Forestry.—PROF. SCHNABEL.

(6.) Class for the Reading of an important French Work on Forestry.—PROF. MAURICE.

(7.) Practical Hints on the Uses of Woods.—PROF. ENTWISLE.

There will be other illustrated lectures by prominent Foresters.

For all Courses in the School of Forestry and all Courses in Natural Science in the Assembly a fee of $10 is charged.

Address all communications concerning the School of Forestry to

JOHN GIFFORD,
May's Landing, N. J.

Destruction of Forests By Drifting Sand at Avalon.

From an Article by Dr. Chas. Dolley in the "New Jersey Forester" for January, 1895.

At Avalon, Cape May County, New Jersey, perhaps as well as anywhere in this country, may be seen the effects of drifting sands. There, great dunes, rising in picturesque billows to the height of thirty and forty feet above high water mark, extend for miles along the coast, and the process of encroachment, and the retarding effect of forest, may be watched in all its phases. The visitor, walking along the crest of one of these sand waves, any breezy summer day, with the myriads of scurrying grains sifting into his shoes and pockets, and at times almost blinding him as they whirl into his face and eyes, is filled with a feeling of wonderment. He sees about him all the appearances of drifting snow, but with the sense that no springtime sun will ever bring back to life and foliage the thousands of trees about him raising their bare and gnarled trunks and branches from the flinty waves which have engulfed them. To the west, he looks out over the tops of a luxuriant forest, the nearest trees stunted and compact in growth, their flattened tops trimmed by the sand-blast as close as if shorn by the shears of some conventional gardener. The bank of sand stops abruptly, and he may slide knee-deep down its landward side, and step out into an almost tropical growth of vegetation. Protected by the great dune, he finds about him an abundant and varied flora, producing color effects which make the place the delight of artists. Here is the holly with its rich red berries and glistening leaves and the savin with its deep, dark green foliage, and the sassafras, the magnolia, the wild cherry, the tupelo or black gum and the oak—all festooned with a growth of gray lichen, and giving support to a luxurant growth of wild grape vines, green brier, woodbine and the trumpet creeper. In the midst of all this profusion of vegetal life, he looks up and beholds impending desolation, the half buried trees fling out their scrawny arms from the dune above him, and the wind moans a dirge as it drives the hurrying sand and pours it in miniature cascades down the encroaching embankment. On this Island of Avalon, as full of wonders to him who has eyes to see, as ever was that enchanted Avalon of Ogier, the Dane, and Morgan de Fay, was once a flourishing settlement—of which still remain the great old farm house, with its outlying smoke-house, bake-ovens, barns and sheds, connected by walks made of the hatches of stranded vessels. Here was dispensed, aforetime, a bountiful hospitality as is evidenced by the great metal platter and covers and odd pieces of mahogany furniture still to be seen in the old house; but the adjoining mowing and corn-fields have become miniature "Landes," producing course and thorny pasturage sufficient but for a few head of cattle, in place of the numbers which tradition tells, were at one time bountifully fed, and whose descendants were to be found running wild on the island not more than twenty years ago.

G. FRANK MOORE,

New Egypt,

New Jersey,

Manufacturer of All Kinds of

Oak-splint and

Bamboo Baskets.

Wanted!

Three Hundred tons of Forest Leaves, to be delivered at any Station on the New Jersey Southern, W. J. and C. & A., Reading and South Jersey Railroads.

$3.50

Cash, per Ton.

Delivered in Bales or Bags at the Station.

Dr. John MacDonald,

Office: 435 Drexel Building,

Philadelphia, Pa.

The

New Jersey Forester

An Excellent Medium for Advertising the Sale of Lumber, Cordwood, Cranberry Bottom, Woodland, Farms, Stock, Fertilizers, Poultry, &c., &c.

"To assist in preserving and protecting the woodlands of the State is the praiseworthy purpose of the New Jersey Forester."—*Newark Evening News.*

RATES MODERATE.

JOHN GIFFORD, Editor,

May's Landing, N. J.

LEWIS CRAMER,

May's Landing, N. J.

INSURANCE & REAL ESTATE AGT.

COMMISSIONER OF DEEDS.

Desirable Building Lots, Fruit Farms, and Cranberry Lands for Sales.

JAMES W. SHEA,

BOOK and JOB PRINTER,

May's Landing, N. J.

SWARTHMORE COLLEGE

FOUR REGULAR COURSES ARE GIVEN.

I. COURSE IN ARTS, for the Degrees of A. B. and A. M.
II. COURSE IN SCIENCE, for the Degrees of B. S. and M. S.
III. COURSE IN LITERATURE, for the Degrees of B. L. and M. L.
IV. COURSE IN ENGINEERING, for the Degrees of B. S. and C. E.

The second degrees named are given for additional study, on conditions named in the catalogue.

Swarthmore College is situated on the P. W. & B. R. R., ten miles from Broad Street Station, Philadelphia. It is under the care of the Friends and admits students of both sexes on equal terms. It has good Libraries of about 15,000 volumes an Observatory, Chemical and Physical Laboratories and Machine Shops. For full particulars, apply for catalogue to

CHARLES DeGARMO, Ph. D., President,
Swarthmore College, Swarthmore, Pa.

THE AVALON SUMMER ASSEMBLY, AVALON, NEW JERSEY.

GENERAL COURSES IN GEOLOGY, BOTANY AND ZOOLOGY. SPECIAL COURSES IN FORESTRY AND HYGIENE.

DEPARTMENTS OF MANUAL TRAINING, LITERATURE AND ART.

DR. CHAS. DOLLEY, President,
108 S 36th St, Philadelphia, Pa.

THIS INSTITUTION IS ASSOCIATED WITH

The Avalon Summer School of Forestry.

John Gifford, Director,
May's Landing, N.J.

COMMENTS.

—o—

"We are pleased to receive the first issue of the New Jersey Forester, a new bi-monthly periodical devoted to the protection and development of forests in New Jersey."—*Friends Intelligencer and Journal.*

"The New Jersey Forester is capable of great usefulness, and its first issue is a most creditable one."—*Newark Daily Advertiser.*

"If it shall succeed in stimulating the interest of the citizens in regard to the preservation and development of forests, it will have performed a great service to the State."—*New York Tribune.*

"Big oaks from little acorns grow."